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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/595,804 . 06/16/2000

Eric C. Hannah

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EXAMINER

ARANI, TAGHI T

ART UNIT

PAPER NUMBER

2131

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/595,804

Applicant(s)

HANNAH ET AL.

Examiner

Taghi T. Arani

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 and 17-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. Claims 1-15, 17-26 are pending

**Response to Arguments**

2. In view of Applicant's arguments filed 10/20/2004 regarding the rejection of the claims 1-15, 17-26 under 35 U.S.C. 102 and 103 a new ground(s) of rejection in this office action is presented.

As per Applicant's argument relating to the rejection of independent claims 12 and 18, the Applicant argues that neither McAdam nor Chouly teach or suggest a transmitter that includes a graphics pattern generator that provides a graphics pattern to overlay on an analog video signal to form an obscured video signal and that non of the references teach or suggest a device to remove a graphics overlay from an analog video signal, pages 2-3 of the REMARKS.

The Examiner responds that McAdam's encoder/decoder including line spin scrambler (to obscure analog video signal) encompasses the claimed feature graphics pattern generator to form and remove an obscured (i.e. scrambled) from a video signal.

As per Applicant's Arguments relating to the rejection of claims 5, 22-25, the Applicant merely argues that none of the references teach or suggest that the cyclic prefix comprises a portion of a transmitted signal and that none of the references teach or suggest a guard interval with an OFDM symbol as cyclic prefix. The Examiner responds that the "guard interval" or "cyclic prefix" (used interchangeably in the art) are well known in OFDM signal transmission (for example, see U.S. patent 5,732,113 to Schmidt et al, issued March 1998, page 1, lines 39-52, page 2, lines 38-47 for a definition) . Furthermore, previously cited U.S. patent 5,371,548

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directed to Williams expressly teaches that " guard intervals" is prefixed to the front end of the data signal to provide additional immunity to multipath interference [col. 3, lines 32-35].

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 12 rejected under 35 U.S.C. 102(b) as being anticipated by prior art of record, McAdam et al. (US Patent, 4,964,162).

McAdam et al teach a television transmitter comprising:

- a graphics pattern generator that provides a graphics pattern for an analog video signal to form an obscured video signal [col. 7, line 14 through col. 8 line 11, see figure 1, VIDEO ENCODER 22];
- an analog-to-digital converter coupled to receive an analog audio signal [figure 8, AID CONVERTER 160];
- a digital encryption stage coupled to said analog-to-digital converter to generate a digital audio signal [figure 8, ENCRYPTOR 162]; and
- a modulator coupled to said stage to generate a modulated audio signal [figure 8, SQPR MODULATOR 170].
- a broadcaster to transmit the obscured signal and the modulated audio signal [column 15, lines 37-57]

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 9, 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art of record, McAdam et al. and further in view of Williams.

Referring to claim 1 McAdam et al. teach a method of broadcasting television programming including:

- generating an analog video signal [column 7, lines 19-21, see also col. 7, lines 41-59];
- digitally encrypting an audio signal to provide a digitally encrypted audio

signal [figure 8, A/D CONVERTER 160, ENCRYPTOR 162, see also col. 4, lines 19-39];

- modulating a carrier with said digitally encrypted audio signal and said analog video signal [column 15, lines 51-54]; and

- broadcasting said audio and video signals [col. 15, lines 40-41],

McAdam et al. fails to teach wherein said digitally encrypted audio signal is broadcast using a plurality of overlapping subcarriers [col. 4, lines 30-39, col. 12, lines 51-60, col. 15, lines 37-57].

Williams teaches broadcasting digital data in the vertical banking interval of a television signal using a plurality of overlapping subcarriers [col. 2, line 44 through co. 3 line 18, see also abstract].

It would have been obvious to one of ordinary skill in the art to modify McAdam et al.'s method of broadcasting television programming with the teaching of Williams to broadcast the digitally encrypted audio signal using a plurality of subcarriers, because plurality of subcarriers with lower frequencies can be transmitted with more immunity than single modulated higher frequency [Williams, col. 2, lines 50-55].

**Referring to claim 9**, McAdam et al. teach the method of claim 1 wherein modulating a carrier includes using a conventional FM subcarriers and modulating said carrier with said audio signal [figure 11 and column 15, lines 32-36].

**Referring to claim 11**, McAdam et al. teach the method of claim 1 wherein generating an analog video signal includes generating an analog video signal with a graphical overlay pattern [col. 7, line 14 through col. 8 line 11, see also figure 1, VIDEO ENCODER 22].

**Referring to claim 21**, McAdam et al. teach the receiver of claim 20 including an analog-to-digital converter coupled to said Fourier transform unit [figure 15, DIA 314, 316].

**5. Claims 2-8, 10, 13-15, 17-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art of record, McAdan et al. as applied to claim 12 and McAdam et al. and Williams as applied to claims 1 above and further in view Chouly et al.

**Referring to claims 18**, McAdam, et al. teach a television receiver comprising:

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- a video detector to separate a received television signal into audio and video components [col. 16, line 5 through col.17, line 25, see also figure 12, AUDIO/VIDEO SEPARATOR];

- a device coupled to said video detector to remove a graphics overlay from an analog video signal [figure 12, VIDEO DECODER 222];

- an digital-to-analog converter coupled to said audio signal [digitizes(column 19, line 21)];

- a decryption stage coupled to said converter [figure 15, DECRYPTOR 310]; and

- a demodulator coupled to said stage [figure 15, SQPR DEMODULATOR 300].

McAdam et al. do not teach a demodulator to demodulate a carrier using a cyclic prefix as a guard interval.

However, Chouly et al. and Williams disclose a demodulator to demodulate a carrier using a cyclic prefix as a guard interval [col. 11, lines 15-16 of Chouly et al. and col. 8, lines 40-60, col. 11 lines 30-32 of Williams] wherein, said guard interval comprises a portion of a received symbol [col. 9, lines 31 through col. 10, line 67 of Chouly et al. and col. 12, lines 25-26 of Williams].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of providing said guard interval as a cyclic prefix to the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes a cyclic guard interval. One would have been motivated to modify McAdam et al.'s system/method as such in order to provide for absorption of echoes due to multi-path channels [Williams, col. 3, lines 32-35].

**Referring to claims 2, 13, and 19,** McAdam et al. fail to teach wherein modulating/demodulating a carrier with said digitally encrypted audio signal includes using orthogonal frequency division multiplexing to form symbols.

However, Chouly et al. (Williams) do disclose modulating a carrier with said digitally encrypted audio signal includes using orthogonal frequency division multiplexing to form symbols [Chouly et al. column 3, lines 46-47, see also Williams col. 2, lines 36-43].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s (Williams') teaching of using orthogonal frequency division multiplexing to the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes orthogonal frequency division multiplexing. One would have been motivated to modify McAdam et al.'s system/method as such in order to provide for a high level of protection because of the complexity of the orthogonal frequency division multiplex transmission technique.

**Referring to claims 3, 14, and 20,** McAdam et al. fail to teach using an inverse Fourier transform to convert a frequency domain signal back to the time domain and a Fourier transform unit coupled to said demodulator.

However, Chouly et al. (Williams) do disclose the method/apparatus of claim 2 and 13 respectively, including using an inverse Fourier transform to convert a frequency domain signal back to the time domain and a Fourier transform unit coupled to said demodulator [Chouly et al. column 4, lines 52 - 541, see also, Williams, col. 2, lines 36-43].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s (Williams') teaching of an inverse Fourier transform and a Fourier transform to the system/method of McAdam et al., such that McAdam et al.'s system



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would be include an inverse Fourier transformer, coupled to the modulator and the digital to analog converter on the transmitter side and a Fourier transform coupled to the demodulator on the receiver side. One would have been motivated to modify McAdam et al.'s system/method as such in order to generate the orthogonal frequency division-multiplexing signal of the frame.

**Referring to claim 4**, McAdam et al. as modified fail to teach providing a guard interval with an orthogonal frequency division multiplexing symbol.

However, Chouly et al. disclose the method of claim 3 including providing a guard interval with an orthogonal frequency division multiplexing symbol [column 9, line 61 and 65].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of using a guard interval with an orthogonal frequency division multiplexing symbol to the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes orthogonal frequency division multiplexing with a guard interval. One would have been motivated to modify McAdam et al.'s system/method as such in order to absorb the echoes produced by multi-path channels.

**Referring to claims 5 and 24**, McAdam et al. as modified fail to teach providing said guard interval as a cyclic prefix and wherein the modulator is adapted to insert a cyclic prefix onto symbols of said modulated audio signal.

However, Chouly et al.-Williams teach providing said guard interval as a cyclic prefix onto symbols of said modulated audio signal [col. 11, lines 15-16 to Chouly and col. 3, lines 32-35, fig. 7 of Williams].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching of providing said guard interval as a cyclic prefix to

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the system/method of McAdam et al., such that the multiplexer of McAdam et al. utilizes a cyclic guard interval. One would have been motivated to modify McAdam et al.'s system/method as such in order to provide for absorption of echoes due to multi-path channels [Williams, col. 3, lines 32-35].

**Referring to claim 6**, McAdam et al. as modified fail to teach setting the guard interval to a time equal to the worst-case multi-path delay.

However, Chouly et al. disclose the method of claim 4 including setting the guard interval to a time equal to the worst-case multi-path delay [column 10, lines 21 -22].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching to the system/method of McAdam et al., such that the system include an guard interval set to a time equal to the worst-case multi-path delay. One would have been motivated to modify McAdam et al.'s system/method as such in order to calculate/allow for the worst case scenario.

**Referring to claim 7**, McAdam et al. as modified fail to teach setting the multi-path delay time about 250 microseconds.

Chouly et al. disclose setting the multi-path delay time to 32 microseconds [column 10, line 19].

Chouly et al. disclose the claimed invention except for setting the multi-path time to about 250 microseconds. It would have been obvious to one having ordinary skill in the art at the time the invention was made to set the multi-path delay time of Chouly et al. to 250 microseconds, since it has been held that where the general conditions of a claim are disclosed in

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the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Allen, 105 USPQ 233.

**Referring to claim 8**, McAdam et al. as modified fail to teach setting the guard interval to less than about one quarter of the symbol duration and setting the symbol time to about one millisecond.

Chouly et al. disclose setting the guard interval to less than about one quarter of the symbol duration [column 10, lines 23-24] and setting the symbol time to 128 microseconds [column 10, line 19].

Chouly et al. disclose the claimed invention except for setting the symbol time to about one millisecond.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to set the symbol time of Chouly et al. to one millisecond, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Allen, 105 USPQ 233.

**Referring to claim 10**, McAdam et al. as modified fail to teach synthesizing a carrier to form a frequency modulated subcarrier.

However, Chouly et al. disclose the method of claim 7 including synthesizing a carrier to form a frequency modulated subcarrier [column 10, lines 9-12].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Chouly et al.'s teaching to the system/method of McAdam et al., such that the McAdam et al.'s system would include a modulator and a Fourier transformer. One would have been

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motivated to modify McAdam et al.'s system/method as such in order to provide a secure output for transmission.

**Referring to claim 15**, McAdam et al. teach the transmitter of claim 14 including a digital-to-analog converter coupled to said unit [figure 9, D/A CONVERTER 212].

**Referring to claim 16**, McAdam et al. as modified teach the transmitter of claim 13 including a device that overlays said graphics pattern on an analog video signal [figure 1, VIDEO ENCODER 22].

Referring to claim 17, McAdam et al. teach the transmitter of claim 13 including a modulator to modulate a carrier with said obscured video signal [column 15, lines 51-54].

**As per claims 22-23, 25-26**, Chouly et al's (Williams') cyclic prefix (i.e. guard interval) inherently comprises a portion of a transmitted/received symbol (i.e. an OFDM symbol), and that said portion inherently comprises a tail of said transmitted symbol [see for example, col. 8, lines 40-60. and fig. 7 of Williams 1, see also, col. 9 lines 30 through col. 11, line 20 col. 11, lines 14-19 of Chouly et al].

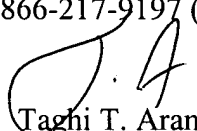
### **Conclusion**

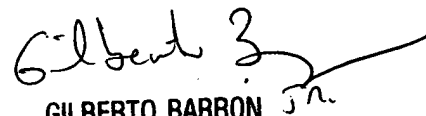
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taghi T. Arani whose telephone number is (571) 272-3787. The examiner can normally be reached on 8:00-5:30 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Art Unit 2131

  
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